Open Access

J. Sustain. Econ. Dev., 2023, 1(2):55-61
ISSN (Online):3005 -2513; ISSN (Print):3005-2505
DOI: https://doi.org/10.22194/JSD/23.17
https://societyfia.org/journal/JSD

Society for Innovative Agiculture

Empowering Financial Inclusion: Investigating Determinants and Overcoming Barriers to Mobile Money Adoption in South Asian Countries

Robina Badar and Sabeen Saif*

Department of Economics, GCUF, Pakistan; Ph.D. Scholar, Department of Economics, GCUF, Pakistan.
*Corresponding author's e-mail: sabeen.saif2@gmail.com

Financial inclusion plays a pivotal role in poverty reduction, enhancing living standards, and fostering global prosperity. This study investigates the determinants of mobile money adoption in South Asian countries, leveraging data from the 2016 InterMedia Financial Inclusion Insights datasets. Encompassing a comprehensive analysis of 45,540 households in India, 6,000 households in Pakistan, and 6,000 households in Bangladesh, the study uncovers the significant influence of factors such as education, age, gender, financial status, and employment type on mobile money adoption. Moreover, it identifies barriers such as gender disparities, educational deficiencies, and lack of awareness. Emphasizing the importance of financial literacy, accessibility to mobile services, and minimal transaction costs, the research underscores the pivotal role of these elements in driving financial inclusion initiatives.

Keywords: Financial inclusion, mobile money adoption, South Asia, determinants, barriers
Jel classification: F3, G2.

INTRODUCTION

The adoption of mobile money can contribute to sustainable development and inclusive economic growth. This study investigates the determinants of mobile money adoption in South Asian countries, focusing on India, Pakistan, and Bangladesh. The transformative impact of mobile money on financial services is highlighted, with a specific focus on its role in savings, payments, and transfers (Allen *et al.*, 2016). The success of M-Pesa in Kenya serves as a model, demonstrating the potential of mobile money services in addressing financial exclusion caused by poverty and infrastructure limitations (Jack and Suri, 2014).

Mobile money usage increases the trend to save by providing newly available savings products, and promote economic development (Beck, 2015). Poor people can save, when given small incentives like text reminders (Atkinson *et al.*, 2013), safe, trusted, and accessible place to save (Dupas and Robinson, 2013). With greater access to mobile money agent's increases household's savings between 2% to 3% (Jack and Suri, 2014).

Financial inclusion disparity between developed and developing countries is due to high cost of financial services (Demuric-Kunt *et al.*, 2015). However, now mobile technology makes it possible to enhance financial services access by changes the way, individual send and receive money, borrow, save and manage risk (Fanta *et al.*, 2016). Mobile technology's low cost services to poor is driven by the fact that mobile technology major cost is initial development & fixed cost and its marginal cost is low per transaction or per new customer. Mobile money transactions are more efficient and save cost and time and directely increase income (Aker *et al.*, 2013; Jack and Suri, 2014). Mobile Money services due to easy and low cost enabled a reduction in the need for Bank branches and ATM's (Anderson *et al.*, 2000). Adoption of mobile money services by consumers depends upon perceived benefits, external presume, skill and information (Martens *et al.*, 2011. Widespread access to mobile phones is linked to economic development (Lee *et al.*, 2012).

This study aims to conduct research to find out the determinants of mobile money adoption at an individual level by using Inter Media's FI Insights datasets 2016 of Pakistan, India and Bangladesh.

***Literature Review*:** Theoretical literature on mobile money financial inclusion is summarized, drawing insights from various studies. Previous research findings emphasize the significance of gender, age, income, and education in determining financial inclusion. The success of mobile money

Badar, R. and S. Saif. 2024. Empowering Financial Inclusion: Investigating Determinants and Overcoming Barriers to Mobile Money Adoption in South Asian Countries. Journal of Sustainable and Economic Development 1:55-61.
[Received 5 Apr 2023; Accepted 18 Jun 2023; Published 21 Dec 2023]

Table 1. Summary of theoretical literature of mobile money financial inclusion

References	Data and data source	Dependent variables	Independent variables	Model	Findings
Warsame *et al.*, (2023)	Survey data 2018 Oman	Saving account	Gender, age, income, and education	Structural modeling	Elders, male, and educated persons are more financially included.
Nsiah (2023)	WDI (2004-2020) Africa	Bank account	GNI per capita, domestic credit to private credit, Institutional quality, and money supply	GMM	GNI per capita, domestic credit to private credit, Institutional quality, and money supply are significant determinants.
Shaikh *et al.*, (2023)	Survey data Ghana	MM services	Consumer agent, advocacy intention	PLS	MM agent credibility and service quality stimulate customer empowerment
Amoah *et al.*, (2020)	Survey data (GAR) Ghana	Use of mobile money services	Education, income, technology, phone credit recharge	Logit model	Education, income, technology, phone credit recharge are main determinants of mm usage.
Lotto (2018)	Survey data (2016)	Bank account, Mobile money account	Gender, age, income, education	Probit model	Gender, age, income and education are the pertinent factors which effect the FI in Tanzania
Apiors & Suzuki (2018)	Questionnaire data 2016-17 of Ghana	Mobile money use	Gender, age, financial status, ownership of mobile phone, income, education and occupation.	Probit model	Results showed that mobile money users save more, invest more in education, then earn more and consume more.
Ouma *et al.*, (2017)	Survey data (2009,2013,2014) Uganda	Mobile financial services use	Gender, age, education, income and location of residence	Logit model	Results showed positive impact of mobile financial services on savings.
Fanta (2016)	FinScope survey data 11 African countries	Mobile money account ownership	Age, gender, education, income, employment and location	Logit model	Results showed that in African countries use of mobile banking is lower than banking services.
George (2012)	Data collected through sampling in Kenya	Mobile money transfers, mobile banking and mobile payments	Age, education, gender, tariffs and volume of transections	Multinomial logit model	Gender, education and wealth was significant determinants of FI by using mobile phones.
Etim *et al.*, (2014)	Questionnaire data of 300 participants of Nigeria	Use of mobile money services	Age, gender, level of education and field of study.	Logit model	Results showed that there is lack of use of mobile money services in Nigeria.

services in Kenya, Nigeria, and other African countries is discussed, emphasizing the importance of mobile technology in promoting economic development.

Demombynes and Thegeya (2012) examined the mobile money services in Kenya by using survey data 2010. Employing the probit model, study concluded that Mobile financial service like M-PESA increased savings. George (2012) examined the determining factors of mobile money financial services in Kenya. Multinomial logit model was used and results identified that gender, education, and wealth of an individual were significant determinates of FI by using mobile phones. Finding also indicated that gender disparities in adopting technologies were presented. Jack and Suri (2014) analyzed the impact of minimum transactional cost of mobile money in Kenya on risk sharing by using survey 2008 data 0f 3000 randomly selected households. Empirical results showed that individuals who used M-PESA could adjust their income shocks easily. Mbidde (2014) examined the level of usage of mobile money services in the context of financial inclusion by using the data of 150 households of rural community of Uganda. The study found that mobile money services mostly used to purchase airtime and to settle bills. Etim (2014) investigated the use of mobile phones for mobile money services and mobile banking by using data in South Eastern Nigeria though questionings of 300 participants. Result concluded that there was lack of mobile money adoption in West Africa.

Fanta *et al.* (2016) explained factors that affect mobile money adoption by households by using the Fin scope survey data of different years in 11 (SADC) member countries. Logistic regression analysis was used for analysis. Results showed that mobile banking adoption was lower than ATM penetration.

Table 2. variables used to measure the FI

Mobile money account	A mobile money account refers that respondent have a registered mobile money account with any mobile money service provider. Dummy that takes the value 1 if respondent use mobile money account and 0 otherwise.
Gender	Gender of the respondent is divided into two categories. Dummy that takes the value 1 if respondent is male and 0 if female.
Age	The current variable has three categories which showed the age of respondent. If respondent age is till 30 years, 31-45 years and above 45 years.
Education	This variable is divided into three categories. Less educated, medium educated and high educated.
Financial Situation	This variable is divided into 3 categories, Poor, middle class and rich.
Working Type	Working type refers that respondent engaged in what type of profession. This variable also categorized into three types, unemployed, self-employed and Regular/ Irregular salaried employed.
Mobile phone use	Mobile phone use refers that individual have mobile phone or not. Dummy takes the value 1 if household have mobile phone to use and 0 otherwise.

Mobile banking and internet banking usage was low across countries except in Botswana and South Africa. While remittances were strangely related to mobile money adoption in these countries. Ouma *et al.* (2017) studied that how mobile phone adoption for financial services become a main instrument of financial system in Africa. After empirical analyses findings showed that availability and usages of mobile phone financial services boost up saving mobilization especially among the poor or low income groups. Omar *et al.* (2019) investigated the usage of mobile money services for saving mobilization in selected countries of Africa. Data was collected from fin scope national survey data for Kenya 2013, Uganda 2013, Zambia 2009 and Malawi 2014. In all selected countries especially in Uganda and Kenya individuals save at home but in Malawi, individuals had no savings at all. Over all, informal channels for savings were mostly used and formal channels for savings were also common in these countries. Expanded mobile financial savings can cause to promote savings for the poor's and low income earners. Narteh *et al.* (2017) examined the determinants of usage of mobile money services and its social influence by using the data of 300 users of mobile money services in Ghana. Results showed that 76% individuals used mobile money services and only 24% people received money through this channel and 32% use mobile money for savings. Cabanillas and Rubio, (2017) explained the determinants of mobile payment systems role in most business opportunities. Data was collected by establishing questionnaire from 400 merchants of Spain in 2015. Binary logistic techniques were used and results showed that neutral network analysis was the most important tool in the prediction of use of mobile payment systems in most business.

Kim *et al.* (2018) analyzed the mobile money devices to facilitate FI in developing countries. This study reviewed 54 research papers of mobile money services and financial inclusion and concluded three major dusters of topics that are delivery, environmental factors and mobile financial services. Study indicated that there was still lack of awareness and information to utilize the mobile money services to enhance financial inclusion by users. Lotto (2018) examined the determinants of FI in Tanzania by using the household survey by TWAWEZA. Through probit estimation findings revealed that age, education gender and income of participants affected the use of financial services and mobile banking. Rich men, educated, and relatively order persons had more chances to be financially included. Same factors that affect the traditional banking, also affect the mobile banking. It was concluded that there was a negative trend of customers to mobile banking. Study recommended the banks to create more channels of mobile banking services by using mobile telecommunication networks. Apiors and Suzuki (2018) concluded the effects of mobile money on individuals' consumptions, payments, informal risk-sharing and income-generation activities. Data was collected 2016-2017 from Ashanti region Ghana. Financial inclusion was depending upon age, gender, financial status, ownership of mobile, education, occupation, and income levels. To estimate mobile money users and to calculate the effects of mobile money on users, probit and Logit model was applied. Ordinary least squares (OLS) were used to examine the volume of mobile money transections. The average age of mobile money users was 32 years. Male and educated persons preferred to use the mobile money.

Data and Methodology: The study utilizes the 2016 InterMedia Financial Inclusion Insights datasets, covering 45,540 households in India, 6,000 households in Pakistan, and 6,000 households in Bangladesh. The binary logistic regression model is employed to identify the major determinants of mobile money adoption. The variables include gender, age, education, financial situation, working type, and mobile phone use. Study aims to identifies the major determinants of mobile money financial inclusion, reasons to start, and barriers to mobile money adoption in these selected South Asian countries**.**

In order to evaluate the determinants of FI in these countries we perform binary logistic regression and use the following equation.

$$\begin{aligned} MMaccount = \alpha + \beta^{*}gender + \sigma^{*}age + \phi^{*}education \\ + \rho^{*}workingtype \\ + \delta^{*}financialsituation + \varphi^{*}phoneuser \\ + \varepsilon \end{aligned}$$

The dependent variable is in binary form i.e. households have mobile money account taking the value 1, if have not mobile money account then taking value 0. So, in binary models outcome variables takes the value 0 and 1. OLS application on such models brings spurious results so binary logit model is used.

The logistic model will be written as follows:

$$pi = E(A = \frac{1}{Bi})$$

Here A=1 showed that a specific household has an account and B is the set of independent variables. Pi is the probability of having account ownership. It can be written as:

$$pi = E(A = \frac{1}{Bi}) = \frac{1}{1 + e^{-(\beta o + \beta B_I)}}$$

Here $zi = (\beta 0 + \beta B)$

So, we can write as:

$$pi = \frac{1}{1 + e^{-zi}}$$

and

$$pi = \frac{e^{zi}}{1 + e^{-zi}}$$

Pi means a chance to have an account and (1-Pi) indicated no chance to have an account.

$$1 - pi = \frac{1}{1 + e^{-zi}}$$

We can write as

$$\frac{pi}{1 - pi} = \frac{1 + e^{zi}}{1 + e^{-zi}} = e^{zi}$$

Pi/1-Pi is the odd ratio to have account ownership. If we take the natural log of odd ratio, then:

$$Li = ln(\frac{pi}{1 + pi}) = zi$$

As Zi showed

$$zi = \beta o + \beta Bi$$

So, Li linear regarding parameters and Bi showed the independent variables (Ghujrati, 2004). We use probit model to explain determinants of mobile money adoption.

RESULTS AND DISCUSSION

The analysis reveals that being male, younger, educated, employed, and having access to mobile phones positively influences the probability of having a mobile money account. Financial situation and mobile phone use also significantly impact mobile money adoption. The findings suggest gender disparities, age-related preferences, and the role of education in shaping mobile money adoption patterns.

Table 3 examines the link between individual characteristics and the probability to have 'mobile money account' in Pakistan, India, and Bangladesh. Our results show that being a 'male' is positively associated with the probability to have 'mobile money account' as compare to 'females'. Our results are in line with previous studies (Fanta, 2016; Lotto, 2018). The possible explanation of such results could be the barriers faced by females to be financially included. Low digital literacy, inability to show collateral, less business experience, male dominated society, and other cultural norms are some of the major reasons for such gender gap.

Regarding 'age' the result shows that in comparison with 'old age', young and middle age individuals have more probability of having mobile money account in Pakistan, India, and Bangladesh. Age is also a significant determinant of holding and using mobile money account in these South Asian countries. This implies that individuals of 'young and middle age' group are more likely to be financially included but after a certain age group, the probability of being financially included decreases. Our results are in line with previous studies (Fanta, 2016; Lotto, 2018; Demirguc-Kunt *et al.*, 2015). Mobile money services and products are more famous in young and middle age adults as results indicated that young adults have more chances to have and use mobile money account and services. New technology is more acceptable and understandable for youth than old ones because of traditional thoughts. This result is supported by the studies of (Ouma *et al.*, 2017; Fanta, 2016).

Education is also very important determinant of holding the mobile money account by the households of South Asian countries. Financial knowledge and financial awareness play a vital role to utilize the mobile money services in developing countries. Highly educated adults have the ability to understand the new technology and its benefits. Results show that less educated have the probability to have less chances of having mobile money accounts in Pakistan, India and Bangladesh. More educated households have more chances to enjoy mobile money services. Same results are concluded by the studies (Ouma *et al.*, 2017 and Tobin, 2011). Educated individuals have the ability to afford the requirements of banks (cost, guarantees, and other requirements), because income level increases with increase in education (Lotto, 2018).

In our study, results of determinants indicated that profession is also important determinant of adopting mobile money services. Unemployed persons have fewer chances to have mobile money account at any formal financial institute than salaried persons. Self-employed also have less probability to have mobile money account than salaried households in these countries. But opposite results we found in a past research (Mbidde, 2014), concluded that businessman use more mobile money services and products. This also supported by the study of (Sergey and Hobor, 2017).

Financial condition also matters a lot in the choice of adoption of use of mobile money services and products. In Pakistan and India, 'poor and middle class' have less probability to have mobile money account than 'rich'. This result implies that high income is related with high financial inclusion. People with high income are most likely capable of having personal

Table 3. Determinants of Mobile Money Account Ownership in South Asian Countries.

	Pakistan		India		Bangladesh	
variable	**β**	**Exp(β)**	**β**	**Exp(β)**	**β**	**Exp(β)**
Gender(male)	0.540***	1.354	0.399**	1.671	0.732***	2.079
	(0.190)		(0.148)		(0.063)	
Female			Reference category			
Age (16- 30 years)	0.166	1.181	1.168**	3.217	0.567***	1.762
young	(0.368)		(.421)		(0.121)	
31-45 year	0.179	1.836	0.619*	1.858	0.610***	1.841
Middle age	(0.367)		(0.424)		(0.118)	
Above 45 years			Reference category			
Old age						
Less educated	-1.265***	0.282	-2.455***	0.086	-1.484***	0.428
	(0.154)		(0.304)		(0.101)	
Medium educated	-0.845***	0.429	-0.908***	0.403	-0.524***	0.428
	(0.142)		(0.222)		(0.101)	
High educated			Reference category			
unemployed	-0.333**	0.717	-0.289*	0.749	-0.222**	0.801
	(0.184)		(0.145)		(0.074)	
Self-employed	-0.023*	0.623	-0.154	0.857	-0.093*	0.098
	(0.115)		(0.211)		(0.229)	
Regular/irregular employed			Reference category			
poor	-0.367**	1.444	-1.439***	0.237	0.102	1.107
	(0.125)		(0.129)		(0.119)	
Middle class	-0.342***	1.407	-0.973***	0.378	0.297*	1.346
	(0.145)		(0.183)		(0.129)	
Rich			Reference category			
Mobile phone user	1.555***	1.211	0.849***	1.428	1.152***	3.166
	(.180)		(0.164)		(0.068)	
Mobile phone non-users			Reference category			
constant	-.0913	0.401	-3.033***	0.048	-1.483**	0.227
	(0.393)		(0.462)		(0.196)	
observations	6000		45540		6000	
Pseudo R2	0.084		0.010		0.154	
Log likelihood	2940.212		3159.897		6943.154	

guarantees and collaterals than poor and middle class who cannot be trusted by banks. Our results are in line with previous studies (Fanta, 2016 and Lotto, 2018). But in Bangladesh poor use more mobile money services. Study supports these results is (Sergey and Hobor, 2017).

Mobile phone use also impacts significantly on the use of mobile money services. Results showed that households, who use mobile phone, have more chances to have mobile money accounts. Many studies concluded these results as (Sergey and Hobor, 2017; Assibey, 2014; Donovan, 2012; Ouma *et al.*, 2017; Jack & Suri, 2014).

Reasons to use Mobile Money: The study explores the reasons individuals start using mobile money services, emphasizing the convenience, speed, and safety compared to traditional methods. Despite mobile phone availability, the low financial inclusion in developing countries underscores the need for increased awareness and utilization of mobile money services.

Table explain the reasons why people start to use mobile money services in these countries.

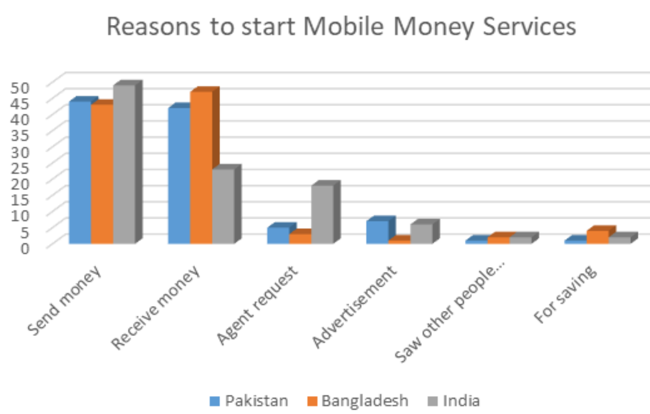

Figure 1. Reasons to adopt mobile money services.

***Barriers to Mobile Money adoption*:** Various barriers to mobile money adoption are identified, including low literacy and technical proficiency, lack of information, financial education, complicated procedures, trust issues, religious reasons, high costs, and limited service access. Addressing these barriers is crucial for expanding financial inclusion.
Such differentiations help to build policy recommendations. The following table explains the barriers to cause not having an account at the formal financial institution.

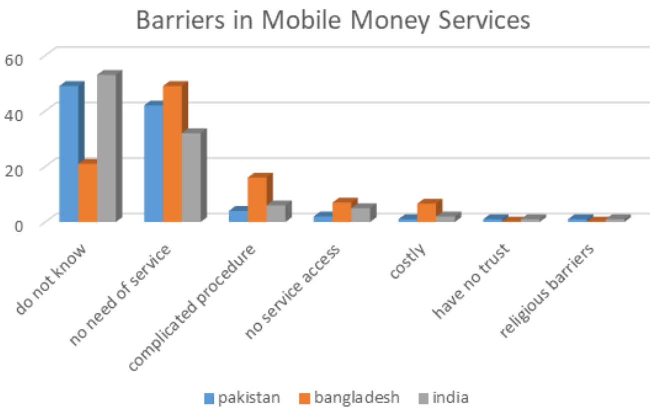

Figure 2. Barriers in mobile money services

***Conclusion and Policy Implications*:** Developing countries, such as Pakistan, India, and Bangladesh have low FI as compared to their developed counterparts. This study investigated the determinants of FI in developing countries using Inter Media's Financial Inclusion Insights datasets 2016. Binary logit results reveal that age, education, gender, financial situation, profession and mobile phone use all are important determinants of holding a mobile money account at any formal financial institute in these selected South Asian countries. Gender gap, lack of education and awareness, lack of money, and lack of new technologies are main barriers of not holding mobile money account.
To increase the FI government should be develop supportive regulative framework, to reduce gender inequality (by enhancing female participation in all economic activities), to reduce cost of financial services (banks should create more channels of mobile banking services by using internet), built the financial infrastructure (easy and cheap access and availability to mobile phones and internet), increase awareness through education (conduct financial literacy programs), and also reduced social barriers.
Results of this analysis may be used as a wake-up call for policy makers to pay attention for certain group of population including women and young people. Women and young people have low financial inclusion and they have to need of government support to be financially included.
Paper concluded that financial institutions should upgrade their technology to adopt the emerging mobile banking technology. To increase the financial inclusion government should develop supportive regulative framework, conduct financial literacy programs and built the financial infrastructure. And private sector would create operators to provide good financial mobile services.

***Details of Author's Contribution*:** I myself on behalf of my co-authors (listed below), hereby give my consent to publish my/our Research Paper/Case Study/Review Paper titled "**Unlocking Financial Inclusion: Examining Determinants and Barriers to Mobile Money Adoption in South Asian Countries**" in the Journal of Sustainable and Economic Development

1. I/We declare that the manuscript under consideration contains solely my/our original work that is neither published previously nor under consideration for publishing in any other journal in any form.
2. I/We have contributed substantially towards the preparation of the manuscript in order to claim the right to authorship.
3. I/We have ensured that all those who have substantially contributed in this manuscripts have been included in the author list and they have agreed to the order of authorship.
4. I/We have ensured that all co-authors have seen and approved the final version of the paper and have agreed to its submission for publication. Others who have participated in certain substantive aspect of the research have been acknowledged for their contribution in an "Acknowledgement" section (N/A).
5. I/We have abided by all the ethical guidelines mentioned on the journal website.
6. This research received no external funding.

Each author's contribution in the given field by using the 'Partially' or 'Fully' scale.

REFERENCES

Aker, J.C. and K. Wilson. 2013. Can Mobile Money be used to promote savings? Evidence from Northern Ghana. SWIFT Institute Working Paper No. 2012-003. http://dx.doi.org/10.2139/ssrn.2217554

Allen, F., A. Demirguc-Kunt, L. Klapper and M.S.M. Peria. 2016. The foundations of financial inclusion: Understanding ownership and use of formal accounts. Journal of Financial Intermediation 27:1-30.

Amoah, A., K. Korle and R.K. Asiama. 2020. Mobile money as a financial inclusion instrument: what are the determinants? International Journal of Social Economics 47:1283-1297.

Anderson, E. 2000. Code of the street: Decency, violence, and the moral life of the inner city. WW Norton & Company.

Apiors, E. and A. Suzuki. 2018. Mobile Money, Individuals' Payments, Remittances, and Investments: Evidence from the Ashanti Region, Ghana. Sustainability 10:1409.

Atkinson, A. and F.A. Messy. 2013. Promoting financial inclusion through financial education: OECD/INFE

evidence, policies and practice. OECD Working Papers on Finance, Insurance and Private Pensions, OECD Publishing, Paris.

Beck, T., A. Demirgüç-Kunt and P. Honohan. 2009. Access to Financial Services: Measurement, Impact, and Policies. World Bank Research Observer.

Beck, T., L. Senbet and W. Simbanegavi. 2015. Financial inclusion and innovation in Africa: An overview. Journal of African Economies 24:i3-i11.

Demirguc-Kunt, A., L. Klapper, D. Singer and P.V. Oudheusden. 2015. The global findex database 2014: Measuring financial inclusion around the world. The World Bank. Washington, D.C.

Demombynes, G. and A. Thegeya. 2012. Kenya's mobile revolution and the promise of mobile savings. The World Bank. Washington, D.C.

Domodar, G.N. and C.P. Dawn. 2004. Basic Econometrics.

Donovan, K.P. 2012. Mobile money, more freedom? The impact of M-PESA’s network power on development as freedom. International Journal of Communication 6:23.

Dupas, S., A. Keats and P.G. Robinson. 2013. Challenges in banking the rural poor. Challenges in Banking the Rural Poor.

Etim, A.S. 2014. Mobile banking and mobile money adoption for financial inclusion. Research in Business and Economics Journal 9:1-13.

Fanta, A.B., K. Mutsonziwa, R. Goosen, M. Emanuel and N. Kettles. 2016. The role of mobile money in financial inclusion in the SADC region. FinMark Trust Policy Research Paper.

George, G., A.M. McGahan and J. Prabhu. 2012. Innovation for inclusive growth: Towards a theoretical framework and a research agenda. Journal of Management Studies 49:661-683.

Jack, W. and T. Suri. 2014. Risk sharing and transactions costs: Evidence from Kenya's mobile money revolution. American Economic Review 104:183-223.

Kim, G., B. Shin and H.G. Lee. 2009. Understanding dynamics between initial trust and usage intentions of mobile banking. Information Systems Journal 19:283-311.

Lee, S.H., J. Levendis and L. Gutierrez. 2012. Telecommunications and economic growth: An empirical analysis of sub-Saharan Africa. Applied Economics 44:461-469.

Cabanillas, F.L. and J.L. Rubio. 2017. Predictive and explanatory modeling regarding adoption of mobile payment systems. Technological Forecasting and Social Change 120:32-40.

Lotto, J. 2018. Examination of the Status of Financial Inclusion and its Determinants in Tanzania. Sustainability 10:2873.

Martin, B.L. and E. Abbott. 2011. Mobile phones and rural livelihoods: Diffusion, uses, and perceived impacts among farmers in rural Uganda. Information Technologies & International Development.pp-17.

Mbidde, J. 2017. Mobile money services and financial inclusion in rural areas of Uganda: A case study of Bukomansimbi.

Narteh, B., M.A. Mahmoud and S. Amoh. 2017. Customer behavioural intentions towards mobile money services adoption in Ghana. The Service Industries Journal 37:426-447.

Nsiah, A.Y. and G. Tweneboah. 2023. Determinants of Financial Inclusion in Africa: Is Institutional Quality Relevant? Cogent Social Sciences 9:2184305.

Omar, M.I. and N. Che Arshad. 2019. Can mobile banking influence depositor's fund? an evidence review. International Journal of Accounting, Finance and Business 4:54-66.

Assibey, E.O. 2014. Nature and dynamics of inequalities in Ghana. Development 57:521-530.

Ouma, S. A., T.M. Odongo and M. Were. 2017. Mobile financial services and financial inclusion: Is it a boon for savings mobilization? Review of Development Finance 7:29-35.

Sergey, I. and A. Hobor. 2017. A concurrent perspective on smart contracts. Financial Cryptography and Data Security: FC 2017 International Workshops, WAHC, BITCOIN, VOTING, WTSC, and TA, Sliema, Malta. Springer International Publishing.

Shaikh, A. A., R. Glavee-Geo, H. Karjaluoto and R.E. Hinson. 2023. Mobile money as a driver of digital financial inclusion. Technological Forecasting and Social Change 186:122158.

Tobin, K.G. 2012. Constructivism as a referent for teaching and learning. The Practice of Constructivism in Science Education. pp.19-38.

Warsame, M.H., A.A. Lasyoud and Y.A. Abdalla. 2022. Determinants of Financial Inclusion: An Evidence from an Emerging Market. Eurasia Business and Economics Society Conference, Springer Nature Switzerland. pp. 301-319.